



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

EMPIRICAL STUDY OF PUPIL-ABILITY IN PUBLIC-SCHOOL ART COURSES—PART I

W. G. WHITFORD

School of Education, University of Chicago

It is the purpose of this article to describe an investigation which was made to determine the relative extent to which ability to draw and ability to appreciate art quality are developed through present-day methods of instruction in the public school. The study involved the definition of the aims or objectives of art instruction and the organization of tests which can be used in determining the extent to which the objectives have been attained. Very little time will be given in this article to a discussion of aims. The following paragraphs outline briefly the modern conception of the most important results of art instruction in the public school.

ANALYSIS OF AIMS OR OBJECTIVES OF ART EDUCATION

Two significant and fundamental outcomes of art education are revealed by an analysis of the relation of this subject to the social and occupational life of the pupil. These are, first, ability to recognize and appreciate art quality, and secondly, ability to draw or describe things graphically.

Art instruction in the past has fallen short of its great educational possibilities because it has overemphasized training in technic and has failed to build up a type of art knowledge which is needed as an important part of a pupil's general education. If art instruction can develop on the part of every pupil true appreciation and knowledge of art quality in all things, it can become an active, essential, moral force in the lives of the people. Art in the public school can attain this objective when taught so as to equip every individual with practical drawing ability and a practical knowledge of the many applications of art to the problems of everyday life. Simple problems in design and construction involving study and arrangement of line, form, and color aid in the development of art judgment and appreciation. Instruction should be planned in the lower grades for this end and not to train all pupils to become members of the profession of designers.

Training in art which aims to develop great technical skill does not add greatly to the practical equipment of the average pupil for later life. Such technical training can be introduced in the elective art courses of the later grades in ample time to meet the needs of pupils possessing art talent and desiring to specialize in the subject of art. The proper end of art education in the elementary grades is training in general art knowledge and the practical application of this knowledge in such a way that it will serve the needs of all pupils and not simply the few. In the high school the art work may properly become special and aim to serve the needs of the few who desire to become specialists in art or who desire to continue art as an elective study for the added culture and appreciation thereby afforded.

A course of study in art which will be of practical value to all pupils in meeting the problems of art as related to everyday life may be summed up as follows: (1) efficient training in art knowledge and appreciation and practical problems in design and construction as aids to this end; (2) simple problems in drawing to develop practical graphic expression. This means training in ability to express ideas in a clear and definite manner through the medium of drawing. Good drawing is necessary for good design.

Art, through its use of color, design, pattern, and descriptive power, can be made a force touching everyday life at every hand. All people find it necessary to decide questions of shape, arrangement, and color. Few can create works of art, but all must use them. Household, civic, business, and personal affairs all require careful art considerations. We do not all require sufficient knowledge to design a building or monument, but all people need as a part of their general education practical knowledge of what is in good taste, refined, and according to recognized standards of art so that they may decide many questions involving principles of art related to the home, business, and industrial life. Those who lack a good workable art knowledge have no background for art judgment and make wrong decisions which result in economic waste. Evidence of this can be found in our streets, public monuments, buildings, store windows, clothing, and manufactured products. A country's industrial products are an index of its development in art. Modern manufactured products will improve in art quality just in the degree that public taste is developed by the teaching of our educational institutions.

TYPES OF TESTS REQUIRED TO MEASURE THE FUNDAMENTAL
OUTCOMES OF ART INSTRUCTION

Following the classification of art abilities thus far defined we may devise a series of tests which will show how far the schools are successful in cultivating such abilities and the ages at which the various abilities seem to mature. Two distinct types of tests were devised and used: First, those that deal with *ability to appreciate art quality* (whether in a chair, rug, dress, painting, statue, or building). This may be thought of as a mental product of art training which is developed to aid pupils in making choices according to correct standards of art. Design, properly studied, aids greatly in developing this type of ability. Second, those which deal with *ability of graphic expression*. This means ability to represent graphically ideas and things of artistic quality. This is derived through the study of drawing, painting, design, modeling, construction, etc. As drawing is a fundamental type of representation it will serve as a satisfactory means of testing this ability. A pupil cannot produce skilful design until he can draw the thing that he wishes to use in his design; hence drawing and design are closely allied. Many schools have adopted the practice of eliminating a large amount of drawing from abstract material, cast drawing, and painting to develop pure technic, etc., and have more intimately co-ordinated the work of drawing and practical design, thereby saving considerable time and adding an element of interest and direct practicability to the work. However, the development of ability to draw still remains as a prerequisite to design and special art work of later years.

Test No. 1 was designed to measure the ability of pupils to select and make judgments involving art principles. The problems of this test offer a means of measuring the pupil's reaction towards art principles. They are similar in character to the problems encountered in the social and occupational demands of everyday life. Test No. 2 was designed to measure the accomplishment of pupils in drawing ability.¹

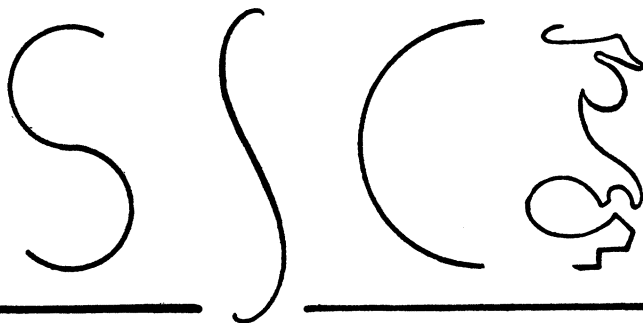
DESCRIPTION OF TEST NO. 1—APPRECIATION TEST

A series of fourteen problems in simple selection or discrimination were prepared as illustrated by plates I, II, III, and IV. They

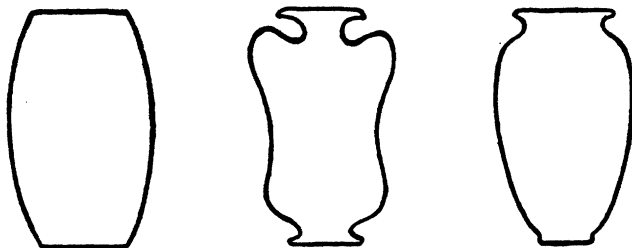
¹ These tests, somewhat revised, in printed form with problem 8 in color, rating scale, and detailed instructions for giving and scoring of results will be made available for distribution by the Prang Company Chicago.

ART APPRECIATION TEST

1



2



3



4

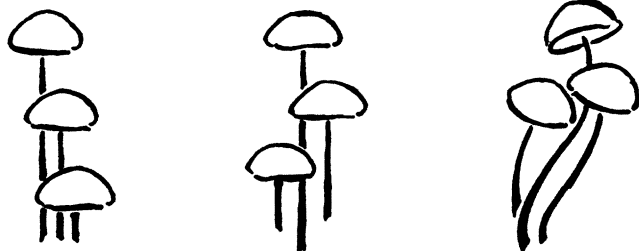
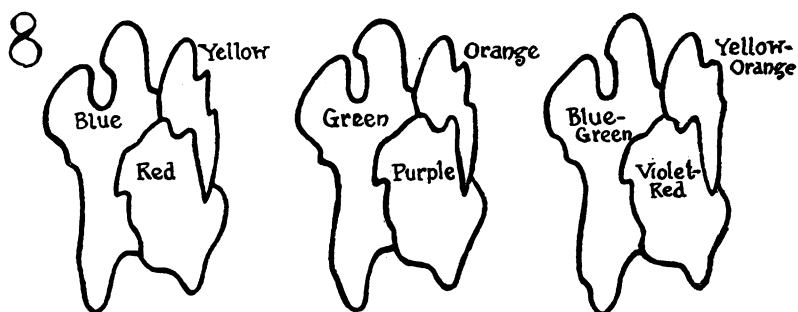
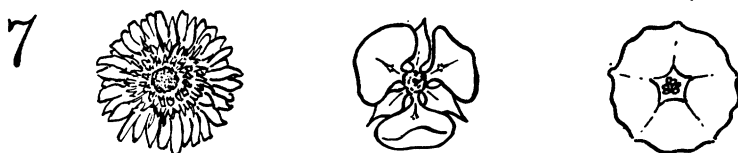
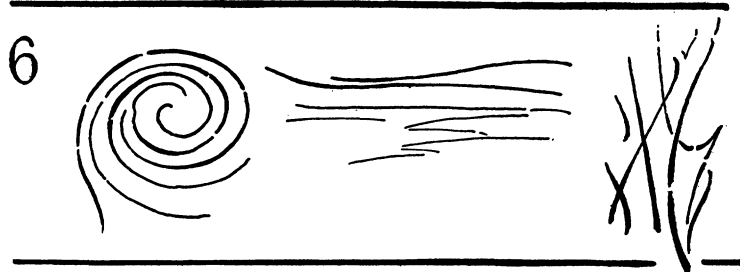


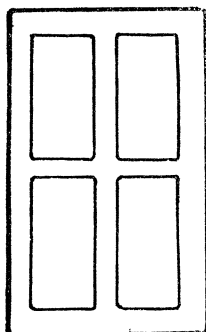
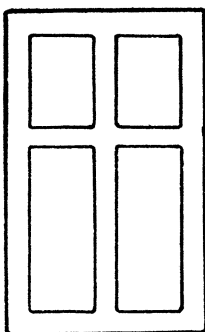
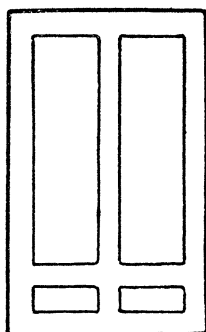
PLATE I



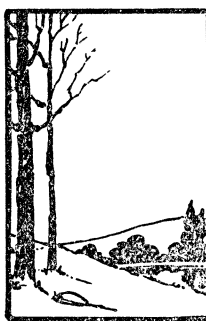
Crude colors, (full strength).—

Softened, harmonized colors.

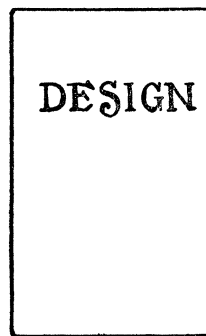
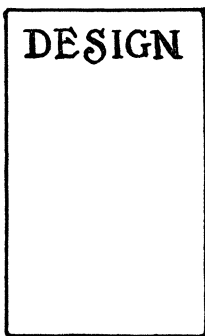
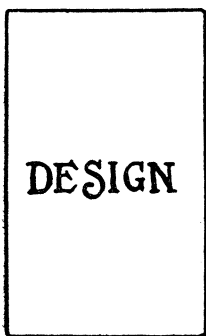
9



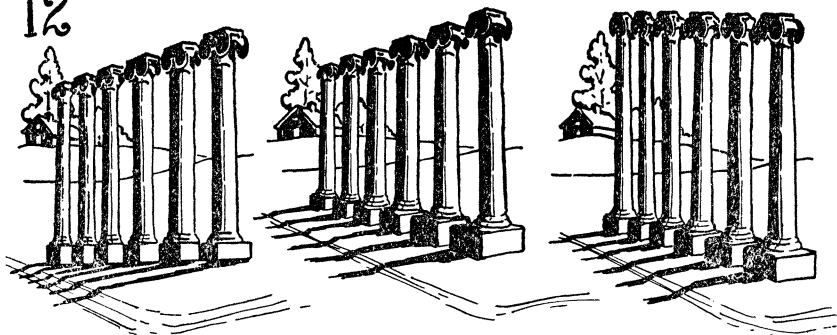
10



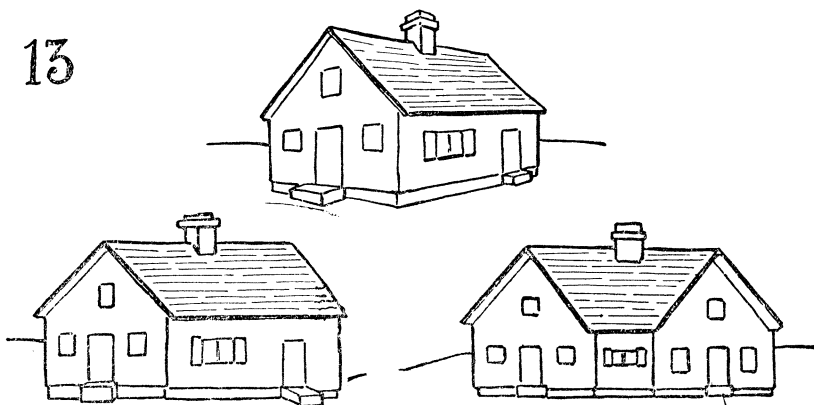
11



12



13



14

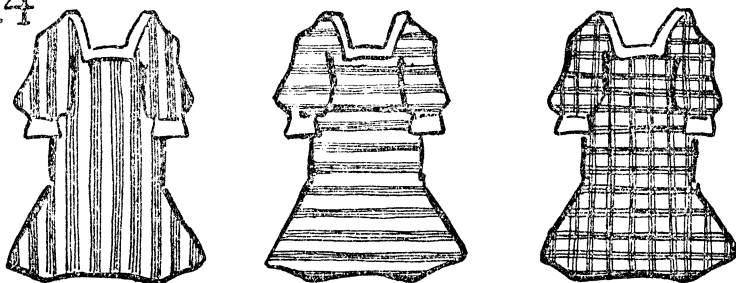


PLATE IV

offer a means of testing ability to discriminate between superior and inferior art considerations. Each section of the test is so arranged that the pupil can record his judgment by making a choice between three or four figures. There is only one correct choice possible so that the scoring of results is very definite. The collection of figures is so made up that choice is not too easy. It would be possible to make the contrast so gross as to compel the pupil to make the right choice, but this exaggeration of differences has been carefully avoided. There are fourteen definite problem-solving reactions in Test No. 1 as follows:

TEST NO. 1. ABILITY TO APPRECIATE (MENTAL)

I. Refinement of curves [line-abstract]. Choice between pleasing, graceful, quality in curves and mechanical, uninteresting types.

II. Refinement of line and form [contour]. Choice between refined, graceful form and crude, uninteresting, and exaggerated form.

III. Appropriateness in utility [line and form]. Choice of most appropriate and pleasing quality for a particular purpose.

IV. Arrangement [line and form; rhythm]. Choice between stiff, equal, geometric spacing and arrangement and variety, order, and harmony of arrangement.

V. Rhythm and grace [harmony of line]. Choice between rhythm, grace, and harmony of line groups and groups lacking this quality.

VI. Expression in line [rest or action]. Contrast between expression of quiet, calm, or repose in line groups and vigor, action, and unrest.

VII. Decorative possibilities for design. Choice between extreme simplicity and complexity in selecting plant forms for design motifs.

VIII. Color sense [color harmony]. Choice between softened, related colors and crude, unrelated colors.

IX. Spacing and proportion [variety and interest]. Choice between proper variety and interest in space breaking and equal, uninteresting, or exaggerated proportions.

X. Pictorial or decorative composition [order and arrangement]. Choice between proper order and arrangement and crowded or equally spaced, monotonous composition.

XI. Spacing [point of greatest interest]. Contrast between correct and improper space relation.

XII. Perspective [vanishing point]. To test knowledge of laws of perspective.

XIII. Perspective [foreshortening]. To test knowledge of laws of perspective.

XIV. Appropriateness [accent and characteristics of line]. Choice of correct use of pattern for a particular purpose.

These tests were prepared in quantities, a separate copy being given to each member of a class. This prevents pupils from influencing each other in their judgments, which often happens in

group tests. Names were written on the sheets and the pupils were required to sit at attention while each problem was explained by the instructor, then all indicated their choice by checking it on signal from the instructor.

This test requires less than fifteen minutes and was conducted with no more comment than was necessary to indicate what the choice was to be in each problem. Brief instructions were found to be more successful in explaining the tests than elaborate discussions of principles involved in the choices. Care must be taken that the person giving the tests does not make explanations that will influence the pupils' decisions; hence the following uniform instructions were given in all grades:

1. Study the curves at the top of the page. Decide which curve is most graceful. Mark it.
2. Decide which vase form is most pleasing, etc.
3. Decide which electric light bracket has most appropriate use of lines.
4. Which group of lines and spots has most pleasing arrangement?
5. Which group of lines has the most rhythm and grace?
6. Decide which group of lines is most suggestive of quiet, calm, or repose.
7. Mark the flower form that has most possibilities for a design motif.
8. Mark the color group that is most pleasing.
9. Which arrangement of door paneling is most interesting?
10. Which pictorial arrangement is most pleasing?
11. Mark the book cover that has the best placing of title.
12. Mark the drawing of Greek columns that shows best perspective.
13. Mark the drawing of the house that shows best foreshortening of lines.
14. Decide which dress pattern would be most appropriate for a very stout, short girl.

DESCRIPTION OF TEST NO. 2—DRAWING TEST

This test is similar to the usual examination in elementary free-hand drawing. It was designed to test ability to draw from specification, to copy, to draw curved lines, to draw from memory, and to draw from simple objects involving foreshortening and perspective. A period of thirty minutes was allowed for this test in all schools to obtain a uniform comparison for fairly rapid drawing. Only one sheet of paper was allowed each pupil and all the drawings had to be made on one side. This was done to simplify the problem of scoring.

TEST NO. 2. ABILITY TO DRAW (REPRESENTATION)

- I. To test proportion drawn from specification.
 1. Draw freehand a small-scale rectangle in the proportion of 5×12.
 2. Draw freehand a small-scale triangle in the proportion of 4×4×2.

- II. To test proportion in representing a given figure [copy].
 - 3. Make a small-scale drawing of the map on board [United States].
- III. To test drawing of curved lines.
 - 4. Copy the curved lines drawn on the board. [Here the instructor drew on the board three groups of well-selected curves.] This enables the pupil to see how they are drawn. See Fig. 1.
- IV. To test representation [from memory and from objects].
 - 5. Draw from memory a horse [side view].
 - 6. Make a sketch of the chalk box [on desk].
 - 7. Make a sketch of the waste basket [on chair].

It is evident that these two types of tests do not measure all phases of art ability. For example, they do not measure the various types of technic—pencil, pen, and brush; the handling of different art mediums as oil, water-color, charcoal, etc.; or the many kinds of construction and industrial work practiced in the schools.

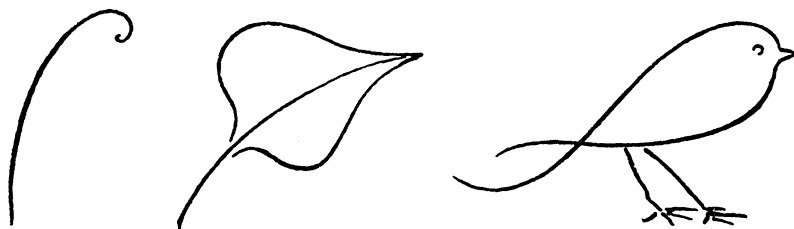


FIG. 1.

The chief aim of this investigation has been to study results of instruction in the basic elements of practical art ability for the mass of pupils and not for the relatively small per cent of special talented pupils. It is believed, however, that the tests are sufficiently inclusive to cover the subject-matter and aims of art instruction during the formative and most important period of the pupil's school life.

With the limitations mentioned above, the tests offer a means of determining the relation, or lack of relation, between the two chief objectives of the art course, and may be used to advantage in checking up subject-matter and in determining wherein the school course needs reorganization, and in determining whether or not significant phases of instruction have been neglected and need additional emphasis.

METHOD OF GRADING WORK

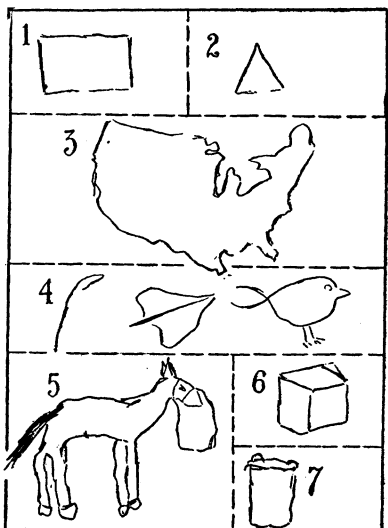
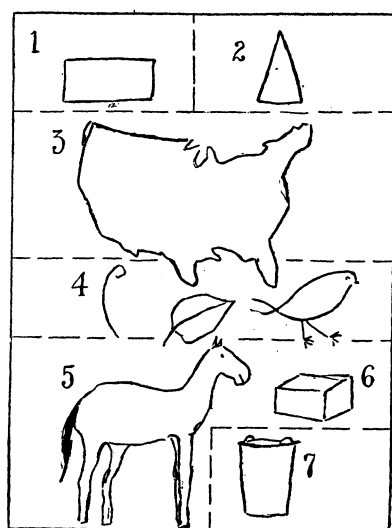
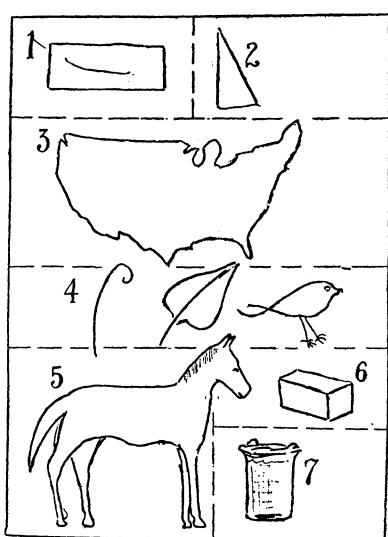
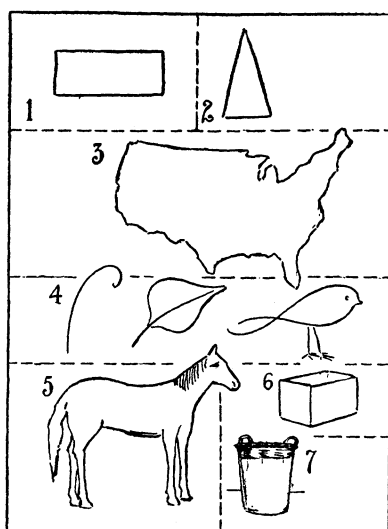
In scoring the appreciation test one-fourteenth was counted off for each incorrect choice. Each of the fourteen problems was given equal value in order to determine relative difficulty of various phases of subject-matter represented by the tests.

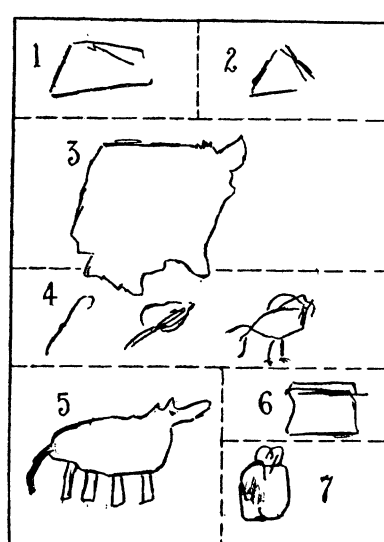
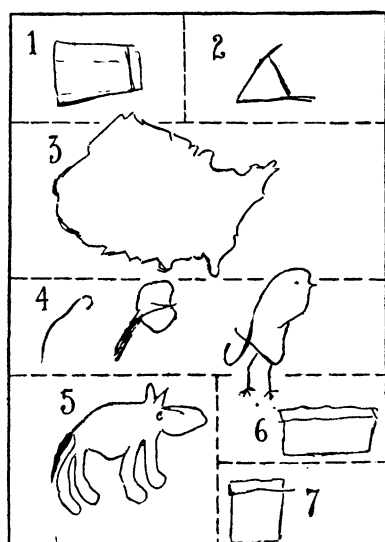
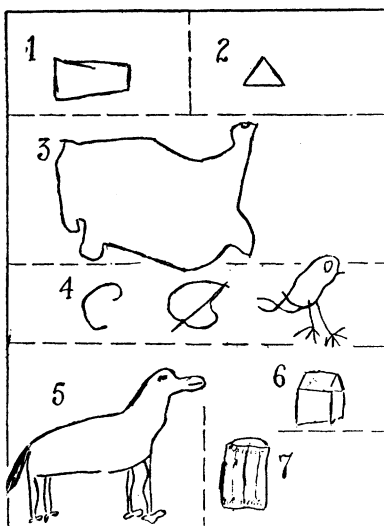
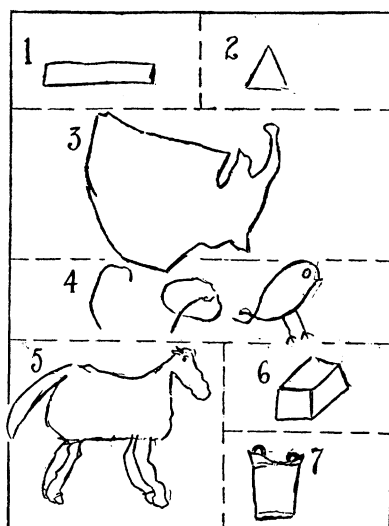
In scoring the drawing test a rating scale was used. The scale was prepared by selecting from all the drawings secured in the various schools ten different standards of attainment for each problem of the test. These standards were carefully chosen so as to represent as nearly as possible ten different steps of attainment in drawing. They represent actual results from Test No. 2 compiled from the various schools from the poorest work in Grade I to the best work in Grade VIII and constitute a rating scale of ten divisions ranging in value from 0 to 100. Each step in the scale represents ten points of superiority or inferiority over the one preceding depending on whether one reads from best to poorest or vice versa. See plates V, VI, and VII.

Thirty persons, including supervisors of art, public-school, normal-school, and college art instructors, aided in the preparation of the scale. It represents as accurate a scale as can be prepared without exhaustive research and complicated mathematical computations. A highly standardized scale is difficult to obtain even by this method because of so wide a variability in individuals' judgment respecting each item to be measured. This was pointed out by Edward L. Thorndike in his research in measuring achievement in drawing.¹

The following method was employed in scoring the drawings from Test No. 2. The scale was placed upon a large table and all the drawings from each school were compared to it and placed in appropriate groups. The drawings for each grade were scored and tabulated separately. As the ten divisions of the scale are clear and distinct, representing approximately equal steps of difference from the poorest drawings to the best, very few teachers of experience will encounter difficulty in scoring the drawings through the use of the scale. It was found that five groups from the poorest to the best covered the variability for each grade with very few exceptions.

¹ EDWARD L. THORNDIKE, "Measurement of Achievement in Drawing," *Teachers College Record* November, 1913.





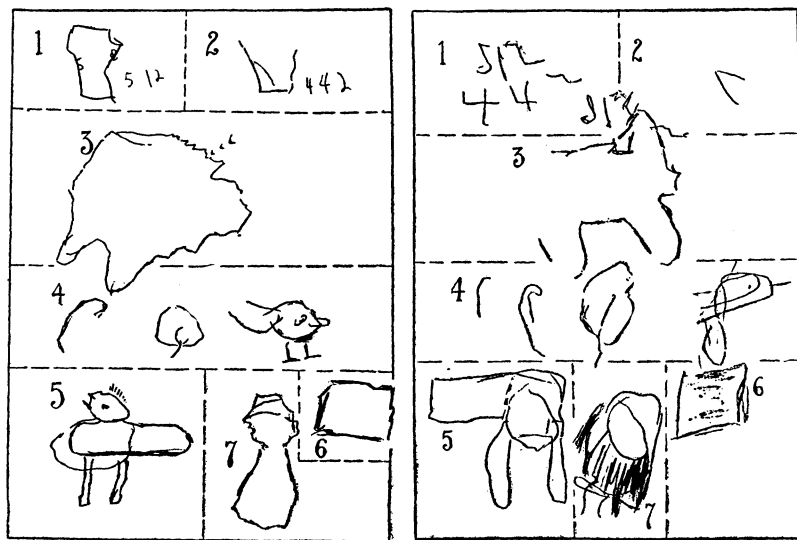


PLATE VII